

**Abstract**

**The crystal oscillator nanochannel sensor comprises a nanochannel structure thin film arranged on an electrode surface of a crystal oscillator and having an oxide layer which contains a surfactant micelle. The sensor senses the existence of a target substance in an analyte solution through a weight change in a nanochannel caused by a recognition reagent and the target substance collected by the recognition reagent. The invention provides a new application of crystal oscillator sensors by utilizing a hydrophobic site provided by the surfactant in a nanometer-size pore.**